

UNDESCRIBED SPECIES OF NEMATOCEROUS
DIPTERA. PART II.

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In continuation of the series of papers instituted under this general title (Part I, Bull. Brooklyn Ent. Soc., 47: 88-94; 1952), I am here describing some further species of unusual interest. The types of the novelties are preserved in my personal collection.

PSYCHODIDAE

Horaiella kuatunensis n. sp.

General coloration of thorax dark reddish brown, the posterior sclerites much darker; wings virtually as in *consimilis*; male hypopygium with the basistyle not or scarcely fused with the ninth sternite; dististyle exceeding one-sixth the length of the body, its mesal face with about eight major spines.

Male: Length about 3 mm.; wing 3 mm.; antenna about 3 mm.

Rostrum and palpi brown. Antenna (male) very long, filiform, subequal to the body or wing, dark brown throughout; antennae apparently 16-segmented, the terminal segment about one-third the length of the penultimate; flagellar segments elongate-cylindrical, with short inconspicuous verticils; no modified ascoids on segments. Head dark brown.

Thorax almost entirely dark reddish brown, the posterior sclerites much darker; thoracic bristles very long and powerful. Halteres dark brown. Legs with the coxae dark brown, trochanters paler; remainder of legs light brown; terminal tarsal segment enlarged. Wings faintly tinged with brown, the veins darker brown. Venation: Virtually as in *consimilis*, as figured by Tonnoir, the forks of cells R_4 and M_1 lying at the same level, that of cell M_3 more basad.

Abdomen brown. Male hypopygium differing conspicuously from that of the genotype in the nature of the basistyle, which is not or scarcely fused with the sternite, appearing as large structures (0.45 mm.) that are about three-fourths as long as the dististyle and much stouter, the inner face with a row of about a dozen long slender bristles, the outermost small and weak, becoming progressively longer and stouter toward the base, the longest nearly equal to the diameter of the style opposite its insertion. Dististyle long and slender (0.6 mm.), provided with about eight major spines along the mesal face, additional to a terminal bristle, the outer spines larger and more powerful, be-

coming weaker toward the base, the spines interspersed with more numerous small spinulae.

In the two Indian species, including the genotype, the coxites (basistyles) and sternite are fused into a large compact capsule. Further distinctions in the present fly involve the phallosome, where the aedeagus is Y-shaped, the stem stout, the arms slender, strongly divergent. Lobes of the ninth tergite with only two major bristles, these very long.

Habitat: Eastern China (Fukien).

Holotype: ♂, Ta-chu-lan, Kuatun, altitude 1500 meters, April 25, 1948 (Joseph Fu); through Dr. Hsiufu Chao.

In 1931, in the Teesta Valley, North India, Dr. Sunder Lal Hora, Director of the Indian Museum, discovered some remarkable new Psychodidae, belonging to two different genera, one of which was described as new by the late Dr. A. L. Tonnoir.¹ The new genus was named *Horaiella*, in honor of the distinguished collector, and included two species, the genotype, *prodigiosa* Tonnoir, and an allied species, *consimilis* Tonnoir. It was with great interest that a third member of this remarkable genus was discovered, living in the highest mountains of eastern China, some 2000 miles to the east of the type locality. The similarity of the wing venation of present fly to *H. consimilis* is astonishing but the structure of the male hypopygium, particularly the more generalized condition of the sternite and basistyle in the present fly, marks the two flies as being very distinct. It is of interest to observe that in this genus, at least, the wing venation proves to be more constant and reliable than does the structure of the male hypopygium.

Despite the objections raised by Tonnoir (l. c., p. 65) to the erection of subfamilies and other higher groups in the Psychodidae based on isolated genera, it seems impossible for me to place the present group in the Phlebotominae and I consider it to represent a distinct subfamily, the Horaiellinae, based on the single genus *Horaiella* Tonnoir, with the three species at present known. The characters of the subfamily are those of the genus, as well-defined by Tonnoir (l. c., p. 54).

¹ Tonnoir, A. L. 1933. Descriptions of remarkable Indian Psychodidae and their early stages, with a theory of the evolution of the ventral suckers of dipterous larvae. *Rec. Indian Mus.*, 35: 53-75, 7 text figs., 1 pl.

BLEPHAROCERIDAE

Blepharocera williamsæ n. sp.

Size very large (wing, male, 7–8 mm., female, 9–10 mm.); males generally yellowish, especially the thoracic pleura, females more pruinose, including the thoracic dorsum; legs brown to dark brown; male hypopygium with the outer dististyle elongate, its apex obtuse, simple; gonapophyses extending caudad beyond the other elements of the phallosome, terminating in an acute spine; lateral penis filaments without flanges.

Male: Length about 6.5–7 mm.; wing 7–8 mm.; antenna about 1.7–1.8 mm.

Female: Length about 8–9 mm.; wing 9–10 mm.; antenna about 2.0–2.1 mm.

Female. Mouthparts yellow to weakly infuscated, the outer segments of the maxillary palpi paler, the terminal segment very long, nearly equal to the preceding three combined. Antennae unusually small; scape brownish yellow to yellow, pedicel brown to brownish yellow, flagellum black; flagellar segments cylindrical, approximately three times as long as broad. Face heavily gray pruinose; anterior vertex more blackened, especially surrounding the ocelli, at its narrowest point about as wide as the first flagellar segment.

Pronotum and mesonotal praescutum and scutum dark gray, the latter with three more blackened stripes, the median one gradually paling behind, extending to beyond the level of the suture; sides of praescutum and scutal lobes more blackened; median region of scutum lighter gray pruinose; scutellum reddish brown, more pruinose basally. Pleura with the mesopleura gray pruinose, lighter beneath, the posterior sclerites, meron and region of the wing root more yellowed. Halteres with stem yellow, knob dark brown. Legs with the coxae and trochanters pale, sparsely pruinose; femora brown, restrictedly yellowed basally; tibiae and tarsi darker brown; fore tibia slightly more than twice the basitarsus (4.2:2), mid-tibia (4:1.8); spur of middle coxa with short dense black setae. Wings subhyaline, costal cell and stigmal region infuscated, the color not passing the radial vein behind; prearcular and costal veins brown, the remainder brownish black to black. Venation: Cell R_2 at margin subequal to cell R_4 .

Abdominal tergites dark gray basally, the posterior half or more blackened; sternites more reddish brown, sparsely pruinose. Ovipositor obscure yellow, the cerci projecting beyond the tips of the

hypovalvae, the apices with strong setae from elongate-cylindrical bases.

Male. Generally similar to the females, differing in coloration and in details of structure. Flagellar segments shorter, approximately twice as long as broad. Mesonotum with the ground color obscure yellow with three more brownish or chestnut brown stripes; pleura yellow with a light gray pruinosity, clearest on the more ventral pleurites. Halteres with knobs weakly darkened. Legs paler, brownish yellow.

Abdomen brown, the bases of the segments narrowly paler, the lateral margins narrowly, the posterior borders more broadly gray; hypopygium light brown. Male hypopygium with the outer dististyle elongate, its apex obtuse, simple. Inner dististyle relatively long, slightly expanded and obtuse at tip. Gonapophysis relatively stout extending caudad beyond the remaining elements of the phallosome, terminating in a strong spine, with a lateral tooth or shoulder at base of the latter; lateral penis filaments slender, with no indication of a flange; central filament with a weak flange on proximal half.

Habitat: Tennessee.

Holotype: ♀, Above Greenbrier Cove, Mount Leconte, Great Smoky Mountains, altitude 4200 feet, June 5, 1930 (C. P. Alexander). *Allotype:* ♂, Greenbrier Cove, altitude 2500 feet, April 22, 1939 (I. W. Williams). *Paratopotypes:* ♂♂♀♀, with the allotype, altitude 2000–2500 feet, April 22, 1939, May 15–22, 1938 (I. W. Williams); *paratype:* ♀, Bluff Mountain, Chilhowee Mountains, April 23, 1939 (I. W. Williams).

I take unusual pleasure in naming this net-winged midge for Dr. Inez W. Williams, to whom I am indebted for numerous Diptera from the Great Smoky Mountains. *Blepharocera williamsae* is the largest and most conspicuous of the eastern North American species of the genus. In recent papers, *B. capitata* (Loew) has been ignored or placed in the strict synonymy of *B. tenuipes* (Walker), a course which I do not feel has been proven or justified. The type of the latter was from the Hudson Bay region of western Ontario (Albany River, flowing into James Bay at Latitude 52° N. Lat.), whereas the types of *capitata* were from the vicinity of Washington, D. C. In 1927, I collected specimens of a *Blepharocera* at Orient Springs, near Amherst, Massachusetts, and sent them to the late Fred W. Edwards, of the British Museum, as being *tenuipes*. It appears that Edwards compared the specimens with the type of *tenuipes* and finding it to be distinct sent

the Massachusetts specimens to Johannsen for description, the species then being defined as *B. similans* Johannsen (Psyche, 36: 123-124; 1929). Unfortunately Edwards provided no comparisons with the actual type of *tenuipes* and it still is uncertain as to how these two species differ, since it seems probable that in the comparisons made of *similans* with *tenuipes* by Johannsen, that the latter material actually refers to the more southern *capitata*. *B. similans* was found associated with the present fly in the various coves on the western slopes of the Great Smokies in 1938 and 1939.

Blepharocera williamsæ is by far the largest and most conspicuous of our eastern North American species so far made known. It differs from all species known to me not only in stature but also in the structure of the hypopygium, especially the phallosome. It may be emphasized that all males of the type series are more yellow than the gray females, but the association of the two as a single species appears correct.

Blepharocera zionensis n. sp.

General coloration of thorax light ochreous, sparsely pruinose, the praescutum with three more reddish stripes; mouthparts yellow; antenna with scape ochre yellow, flagellum black; terminal segment of flagellum nearly twice the penultimate; halteres and legs obscure yellow; wings nearly hyaline; abdominal tergites brown, sternites yellow; male hypopygium with the outer dististyle widened distally, the inner apical margin conspicuously emarginate; inner dististyle a short flattened spatula; gonapophysis extended into a long hairlike point; penis filaments with narrow dusky flanges on proximal third.

Male: Length about 5 mm.; wing 6-6.2 mm.

Mouthparts, including the palpi, yellow; clypeus gray pruinose, demarked by very deep sutures. Antennae with the scape ochre yellow, flagellum black; terminal segment nearly twice the penultimate; intermediate segments about twice as long as broad. Head dark gray; eyes rather broadly separated.

Thorax appearing almost uniformly light ochreous, the ground color very pale gray, the praescutum with three vaguely indicated more buffy or reddened stripes, the scutal lobes similarly patterned; remainder of thorax ochreous, very sparsely pruinose, the dorsal mesopleura more heavily so. Halteres obscure yellow. Legs obscure yellow, the terminal tarsal segments darker; claws relatively small and simple, hairy on proximal half. Wings nearly hyaline, the narrowly elongate stigmal region more yellowed;

veins light brown. Macrotrichia on outer third of R_4 and all of distal section of R_5 . Venation: R_s about one-half longer than $r-m$, in cases more or less angulated at near midlength; branches of R_s diverging gradually, cells R_2 and R_4 at margin subequal.

Abdominal tergites brown, the posterior borders of the segments narrowly pale, sternites yellow; hypopygium dark. Male hypopygium with the outer dististyle widened distally, the inner apical margin conspicuously emarginate. Inner dististyle appearing as a short flattened spatula, the apex obtuse. Gonapophysis broad basally, narrowed on outer half, terminating in a hairlike point. Aedeagus with penis filaments with narrow dusky wings or flanges on proximal third.

Habitat: Utah.

Holotype: ♂, Zion National Park, altitude 4500 feet, June 22, 1942. (C. P. Alexander). *Paratopotypes*: 3 broken ♂♂, June 21-22, 1942.

The present fly is readily told from the other small-sized Nearctic species of the genus by the generally pale color and structure of the male hypopygium, particularly the outer dististyle, gonapophysis, and aedeagus. It is readily told from the various eastern species, as *Blepharocera capitata* (Loew) and *B. similans* Johannsen, by the hypopygial structure, especially the gonapophyses.

Paltostoma parviceps n. sp.

Thorax massive, the head very small; mouthparts very small, maxillary palpi 1-segmented; antennae 15-segmented, the two terminal segments partly fused; thorax black, handsomely patterned with silvery; wings with a weak dusky tinge, the entire membrane densely provided with microtrichia; vein A preserved for nearly two-thirds its length.

Female: Length about 6.5 mm.; wing 7.5 mm.; antenna about 1.1 mm.

Head very small as compared with the enlarged thorax, dark colored throughout. Mouthparts very reduced; mandibles lacking; maxillary palpi apparently 1-segmented, excluding the palpiger, larger than in *lobata*; labial palpi projecting only a short distance beyond the pointed labrum. Eyes of moderate size only, widely separated by the vertex, not bisected; all ommatidia equal, with short setae. Antennae dark brown, 15-segmented; pedicel only a little larger than the scape, flagellar segments about one and one-half times as long as broad; outer two flagellar segments partially fused, the smaller outer segment somewhat pointed at tip.

Thorax massive; praescutum with the ground silvery white, with three broad brownish black stripes; posterior sclerites of notum paler brown, more or less silvery pruinose, the scutal lobes margined posteriorly with darker; postnotum very reduced. Pleura brown, pruinose, the most conspicuous areas being a bright silvery transverse area from the lateral end of the mesonotal scutum across the pleura, and a smaller marking on the meral region. Halteres blackened, the base of stem more yellowed. Legs with the coxae and trochanters small, brown, pruinose; remainder of legs brown, the femoral bases more yellowed; posterior tibia with a single long spur; last tarsal segment with a group of strong black bristles on flexor surface near base; claws long and nearly straight, simple, lying parallel and approximated to one another, the claws only a little shorter than the last segment. Wings with a weak dusky tinge, the veins darker. The entire membrane densely provided with microtrichia. Anal lobe of wing very conspicuous. Venation: R_s short, less than one-half $r-m$; vein R_4 short, oblique, nearly equal in length to the distance on costa between it and vein R_{1+2} ; vein A preserved for nearly two-thirds its length.

Abdomen brown, with pruinose areas. Spermathecae three, subglobular to pyriform.

Habitat: Peru (Junin). *Holotype*: ♀, Carpapata, Tarma, altitude 2600 meters, May 1, 1940 (Felix Woytkowski).

Most similar to *Paltostoma lobata* Edwards (Peru, near Lima), differing most evidently in the larger size and in the dense microtrichia over the entire wing surface.

***Paltostoma delectata* n. sp.**

Belongs to the *schineri* group; mesonotum chestnut brown, including four praescutal stripes, the interspaces broadly silvery; no blackened areas on thorax; fore femora chiefly blackened, with an obscure yellow subterminal ring, remaining femora yellow with the tip narrowly brownish black; claws strongly toothed; wings crystal clear, the veins brownish black; microtrichia in apical cells only including R_3 and R_4 ; a short spur of the Anal vein persists; male hypopygium with the ninth tergite conspicuously emarginate, the lobes broad; outer dististyle exceedingly broad and flattened, inner style slender, only slightly dilated outwardly.

Male: Length, excluding rostrum, about 3.5 mm.; wing 5 mm.; rostrum alone about 1.6 mm.

Rostrum pale brown, the elongate part consisting of the labrum,

hypopharynx and labium; labial palpi short, approximately four times the basal diameter; maxillary palpi short, apparently 1-segmented. Front dull orange, silvery pruinose. Antennae 15-segmented, black, the scape paler; flagellar segments shortsub-cylindrical, the length less than twice the breadth; terminal segment longer than the penultimate. Head chestnut brown, variegated with silvery on the anterior vertex.

Pronotum pale brown, pruinose. Mesonotum chestnut brown, including four broad confluent praescutal stripes, leaving broad silvery areas on the humeri and at the prolongations of the suture; posterior sclerites brown. Pleura obscure yellow, the dorsal sternopleurite and meral region silvery. Halteres with stem yellow, knob blackened. Legs with coxae and trochanters yellow; fore femora chiefly black, more brightened basally and with a very obscure yellow to scarcely evident subterminal yellow ring; remaining femora yellow, the extreme tips brownish black; fore tibiae and tarsi black, the remaining tarsi obscure brownish yellow; posterior tibia with a single long spur; claws with a strong spine beyond base; last tarsal segment with a group of strong black setae at base of flexor surface. Wings crystal clear, the veins brownish black to black, very conspicuous; apical cells of wing, including most of R_3 and outer end of R_4 , with microtrichia, the remainder without these. Venation: R_s oblique, about one-half $r-m$; petiole of cell R_s more than twice vein R_4 . Anal vein represented by a strong spur that extends to just beyond the axillary thickening.

First abdominal tergite yellow, the remainder brown, their extreme bases paler and more or less pruinose; sternites more extensively yellow, silvery pruinose beneath, the sides infuscated; outer segments, including hypopygium, dark brown. Male hypopygium with the ninth tergite conspicuously emarginate, the lobes broad. Outer dististyle exceedingly broad and flattened, the apex truncated; inner dististyle slender, only slightly dilated outwardly.

Habitat: Costa Rica. *Holotype*: ♂, Rivas, altitude 2875 feet, January 1939 (Dean Rounds). *Paratopotype*; ♂, altitude 2975 feet, January 1939.

The present fly is most similar to *Paltostoma schineri* Williston (Lesser Antilles, Trinidad), differing in the coloration of the thorax and legs. Williston describes the antennae as being only 13-segmented. Edwards (Diptera Patagonia & So. Chile, 2, fasc. 2, Blepharoceridae: 68; 1929) provides further notes on the

types of *schineri*, including both sexes. The early stages and further notes on the female are provided in the outstanding paper by Scott and Lamb (The early stages of *Paltostoma schineri*, Williston. *Ann. Mag. Nat. Hist.*, (8) 15: 181-202, 3 pls.; 1915).

Dynastes Granti Horn in Utah.—I was pleasantly surprised on September 12, 1951, when Dr. D. M. Hammond, Head of the Zoology and Entomology Department of the Utah State Agricultural College, handed me a fine living specimen of this large beetle which was enclosed in a pint glass fruit bottle. The specimen had been collected at Kanab, Utah, on September 5, by Frank Hanson of Providence, Utah. He found the unusual beetle to be crawling up the screen door of his auto court cabin, the morning of September 5. Having become somewhat interested in insects through his entomologist brother, Wilford, he brought the beetle home with him. Because Wilford is and will be in Sweden for nearly another year, the specimen was given to the College. It was identified by Dr. E. A. Chapin as "*Dynastes granti* Horn". Another specimen of this species was present in the College collection. It had been taken by Dr. D. D. Jensen on July 1, 1937, below Flagstaff, Arizona.—G. F. KNOWLTON, Logan, Utah.

A Lettuce Root Aphid: An injurious population of aphids was found to be infesting lettuce roots in a field east of Murray, Utah. An abundance of wingless and winged specimens from this field, collected October 26, 1950, was received from G. Thorne and Dr. E. M. Anderson. Professor M. A. Palmer recently examined four prepared slides of this material, identifying it as *Pemphigus balsamiferae* Williams or *P. bursarius* (L.) This material appears to be the same as the commonly injurious sugar beet root aphid which causes periodic beet crop injury in Utah. Aphid material considered as *P. balsamiferae* was collected on *Chenopodium album* at Cowiche, Washington, May 21, 1947, by B. J. Landis and E. W. Davis. This aphid also has been collected by the writer on several occasions in northern and central Utah and at Franklin, Idaho, on roots of this weed; and at Powell, Wyoming, on sugar beet roots, April, 20, 1948, by H. Beaudoin. Accidental alates of the beet root aphid has several times been collected on celery in northern Utah, being particularly numerous in fall.—G. F. KNOWLTON, Logan, Utah.